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Tropical Fish Emporium

CS 340 - Introduction to Databases: Section 401
Project Step 6: Implement UPDATE and DELETE operations

Andrew Clos & Haley Woehrle

Project Step 6: Implement UPDATE and DELETE operations: Feedback from peer review

Tom Barabasz
Your group is on the right track. It looks like you've put some time into CSS and styling. To make it easier, I suggest using a CSS framework like Bootrstrap. It makes life a whole lot easier.

I also found the site UI a bit confising. I was not sure what and how to update. I'd suggest seperating some of the functionalities. As a user, I dislike scrolling all the way to the bottom just to find the submit button. Think of users as very lazy beings and try to make it easy for them to use the site.

Take a look at this code https://github.com/knightsamar/cs340_sample_nodejs_app It's a good example on how to structure the server side code. My group used it. Having a good structure in place makes it easier to stay organized.

Good luck

Project Step 5: Implement CREATE + READ operations: Feedback from peer review

Greg Noetzel

Bonus points for including the overview on the front page.

1. Are the queries syntactically correct?
    a. Yep! All queries currently written are syntactically correct.
2. Are there queries providing all functionalities as required by the CS340 Project Guide ? What query is missing ? What needs to be fixed?
    a. You are missing a delete for the sales_products table.
3. Do the queries cover the relationships as required by the CS340 Project Guide?
    a. All relationships are accounted for.

DDL:

4. Is the SQL file syntactically correct?
    a. I was able to import without the error you indicated by un-checking the "Enable foreign key checks" under "other options" in the import tab on myPHPadmin. Hope that helps.
5. Are the data types appropriate considering the description of the attribute in the database outline?
    a. Yep! I noticed that your product IDs are not auto-incrementing but all other IDs are. I wasn't sure if that was intentional so I wanted to mention it.
6. Are the foreign keys correctly defined when compared to the Schema?
    a. Yep! All foreign keys look properly defined.
7. Are relationship tables present when compared to the ERD/Schema?
    a. Yep! Intermediary table is intermediating.

Ruben Sanduleac

1. Are the queries syntactically correct?
    a. Yes, based on the files provided the queries are all syntactically correct.
2. Are there queries providing all functionalities as required by the CS340 Project Guide ? What query is missing? What needs to be fixed?
    a. Yes, currently there are all select and insert queries for each of the tables that are needed. There is also the required update query. There is one delete querie missing for sales_product table.
3. Do the queries cover the relationships as required by the CS340 Project Guide?
    a. Yes, based on the information given the queries cover the relationship requirements.

DDL:

4. Is the SQL file syntactically correct?
    a. Yes, the SQL file is syntactically correct. I had one issue importing the file into phpMyAdmin. I had error #1451

    ```
    #1451 - Cannot delete or update a parent row: a foreign
    key constraint fails

    -- EMPLOYEES ~~

    DROP TABLE IF EXISTS employees
    ```

5. Are the data types appropriate considering the description of the attribute in the database outline?
    a. The database outline was not found in the zip file. The website did provide a clear representation of how it supposed to look like. The data types seem to be correct based on each attribute that is present.
6. Are the foreign keys correctly defined when compared to the Schema?
    a. Like the database outline, the schema was also not included in the submission. Based on the SQL files it looks like the foreign keys are correctly set up in the present files. I'm not sure why, but I had an issue when I imported the file. I think the foreign key is not configured correctly for Employees table. Can't know for sure because the schema is missing.
7. Are relationship tables present when compared to the ERD/Schema?
    a. The ERD and schema were not present in the submission. Based on the SQL website and tables that were created it does look like the relationships were set up correctly. Just I had an issue with the foreign keys in Employee table.

Website:

The website is built very well. The layout is set up in very logic manner. Thus, making it very user-friendly. I had no issues in navigating between different pages and testing the different tables. and easy to navigate. Overall, everything looks excellent.

Adam Slusser

1. Is the SQL file syntactically correct?
    a. Yes it is with the exception of the INSERT INTO sales_products VALUES which gave me the error "Cannot add or update a child row: a foreign key constraint fails"
2. Are the data types appropriate considering the description of the attribute in the database outline?
    a. The outline wasn't included in the zip file but based on browsing their website everything appears to be correct.
3. Are the foreign keys correctly defined when compared to the Schema?
    a. The Schema wasn't included in the files submitted. But judging from the website and the tables in myphp everything appears to be correct.
4. Are relationship tables present when compared to the ERD/Schema?
    a. I'm not able to compare the ERD to the Schema as these weren't submitted with their files.

DML:

5. Is the SQL file syntactically correct?
    a. Yes everything appears to be working correctly.
6. Are the queries providing all functionalities as required by the CS340 Project Guide?
    a. All the requirements appear to have been met from the queries that the group provided.
7. What query is missing? What needs to be fixed?
    a. There don't appear to be any missing or that need to be fixed.
8. Do the queries cover the relationships as required by the CS340 Project Guide?
    a. All the queries do cover the required relationships.

Shile Song

1. Is the SQL file syntactically correct?
    a. I can't import SQL file in the phpmyadmin. I look around the code and I find the error appear in that not set the `saleID` in class `sales` as a key.
2. Are the data types appropriate considering the description of the attribute in the database outline?
    a. It looks all tables follow the relationship base on the browsing.
3. Are the foreign keys correctly defined when compared to the Schema?
    a. Yes, every foreign key correct define follow the schema.
4. Are relationship tables present when compared to the ERD/Schema?
    a. Yes, these relationship tables present good with the ERD.

DMQ:

5. Are the queries syntactically correct?
    a. The DDL can't run in the server, so I don't test the dmq.
6. Are there queries providing all functionalities as required by the CS340 Project Guide ? What query is missing ? What needs to be fixed?
    a. The queries providing all follow the guild. They got select, insert, delete, update.

7. Do the queries cover the relationships as required by the CS340 Project Guide?
    a. Yes, they follow the guide.

Step 6: Actions based on feedback

Based on the peer review feedback, a code review and cleanup was done to better organized things. Time permitting, we may break the index.js file into smaller files.

We have decided not to use bootstrap though as we do not feel that our website needs a cosmetic overhaul. Additional formatting and cleanup to the handlebars files (html) has been done to provide better continuity.

Step 5: Actions based on feedback

1. We added a delete to the sales_products table
2. We changed variable names to prevent syntactical errors in js

Andrew Clos & Haley Woehrle
Determined Databasers
Group #27

A) Database Overview

Tropical Fish Emporium (TFE) is a small chain of fish stores in your city and they need a database to help manage their business structure. The business owner would like a better way to track the relationships between her **40** employees and their overall sales of **55** unique products. TFE has an average of **100** sales per day. All TFE customers have a customer profile so that the store can hold information about the type of products they use and need for their home aquariums. There are a total of **1500** customer profiles in the system. The website will utilize a DB backend to store, manipulate, sort, link, and aggregate different types of data used by our client, Tropical Fish Emporium.

Employees	40
Customers (profiles)	1500
Average Sales Per Day	100
Products	55

Table 1. TFE's primary business statistics.

The following changes were made between step 1 and step 2 of the project:

i. Changing the entity "Transactions" to "Sales" and changing the entity "Fish" to "Products"
ii. Two attributes had plural naming and these were changed to singular.
iii. We elected to keep the "Stores" entity because we are planning to have multiple (3) stores and our client would like to be able to compare sales and employee performance across each store.
iv. Addition of foreign keys to Employees and Transactions entities
v. Renaming of several primary key attributes for clarity
vi. Re-ordering and renaming of other attributes to better illustrate their importance and provide more clarity to their description
vii. Removal of extraneous Fish attributes. These may be added back in if we expand on the fish category and add other relationships.

B) Database Outline

Employees

i) Attributes:
   1) employeeID: int, primary_key, auto_increment, not NULL
   2) storeID: int, store id where the employee works

3) title: varchar(255), not NULL (i.e. Assistant Manager)
4) startTime: time, not NULL
5) stopTime: time, not NULL
6) hourlyRate: float, not NULL. Pay rate in dollars per hour.
7) partTime: boolean, not NULL. True if employee is a part time worker
8) empFirstName: varchar(255), not NULL
9) empLastName: varchar(255), not NULL

ii) Relationships:

1) *sales:* 1:M. An employee can have many sales, but each sale will be tied to one and only one employee.

Customers

i) Attributes:

1) customerID: int, primary_key, auto_increment, unique, not NULL
2) email: varchar(255), optional if no complete profile
3) memeberSince: date/time, not NULL. when the customer profile was created.
4) custFirstName: varchar, optional (not all customers will have a complete profile)
5) custLastName: varchar, optional (not all customers will have a complete profile)

ii) Relationships:

1) *sales:* 1:M: a customer may have many sales, but each sale can only belong to one customer.

Sales

i) Attributes:

1) saleID: int, primary_key, auto_increment, not NULL
2) employeeID: int, foreign_key, not NULL. The employee who handled the transaction.
3) customerID: int, foreign_key, not NULL. The customer who made the transaction.
4) transactionDate: date/time, not NULL. The date of the sale.
5) totalPurchase: double, dollar amount of sale, not NULL

ii) Relationships:

1) *employees:* M:1. An employee may have many sales, but each sale must be related to one and only one employee.
2) *customers:* M:1. A customer may have many sales, but each sale must be related to one and only one customer.
3) *sales_products:* 1:M: A sale can include many different products and a product type can be part of many individual sales.

Sales_Products

i) Attributes:

1) saleID, primary_key, foreign_key, not NULL.
2) productID, primary_key, foreign_key, not NULL.
3) number, int, not NULL. Number of a certain product that is part of this order.

ii) Relationships:

1) This table facilitates the M:M relationship between orders and products. Because an order may contain many products and a product can be present in many different orders, this table is needed. Furthermore, this table makes it possible to have multiple items of the same product present on an individual order.

Products

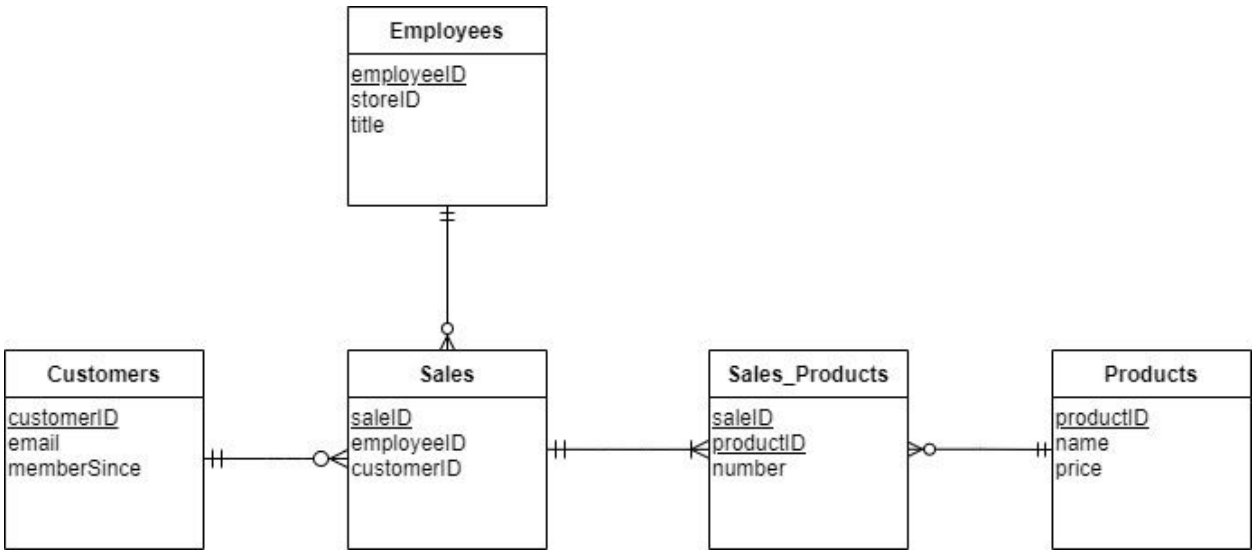
i. Attributes

1) productID: int, primary_key, not NULL. Identifies each type of fish in the system by a unique number
2) pName: varchar, not NULL, the product name/description: varchar, describes what the product is
3) price: float, how much the product costs.

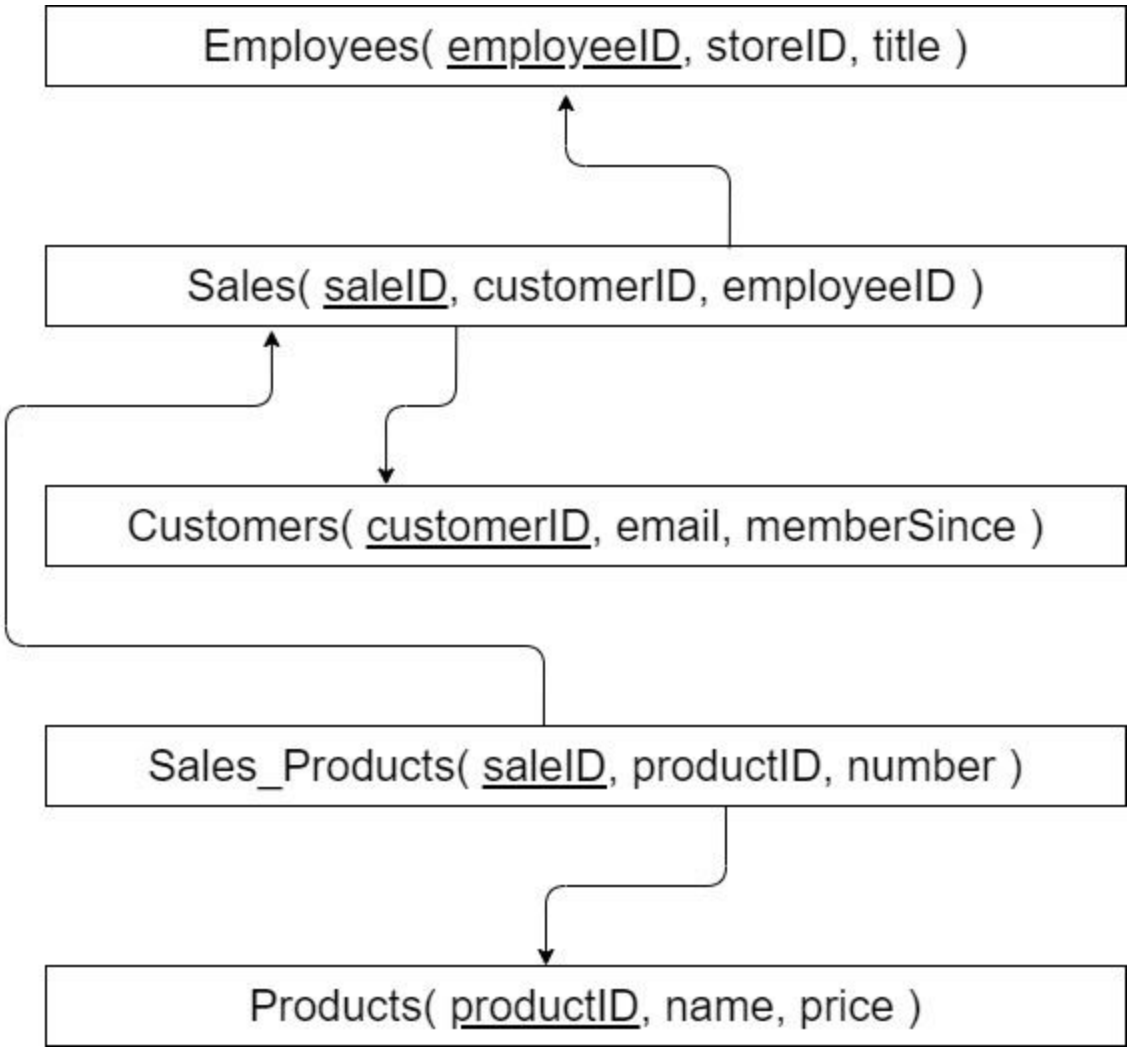
ii. Relationships:

1) *sales_products:* 1:M, a product in the inventory can be part of many different sales, and a sale can have many different types of products associated with it.

C) Entity-Relationship Diagram



D) Schema


Employees(employeeID, storeID, title)
Sales(saleID, customerID, employeeID)
Customers(customerID, email, memberSince)
Sales_Products(saleID, productID, number)
Products(productID, name, price)

Andrew Clos & Haley Woehrle
Determined Databasers
Group #27

Project Step 3: Design HTML Interface: Feedback from peer review

Casey Levy

1. Does the UI utilize a SELECT for every table in the schema? In other words, data from each table in the schema should be displayed on the UI. Note: it is generally not acceptable for just a single query to join all tables and display them.
    a. Yes it seems as if it does based on the current site and documentation. Each page has its own table and information matching what is given in the project's Schema.
2. Does at least one SELECT utilize a search/filter with a dynamically populated list of properties?
    a. There are search options on all pages except for the Manager page.
3. Does the UI implement an INSERT for every table in the schema? In other words, there should be UI input fields that correspond to each table and attribute in that table.
    a. Yes, nearly every table so far has an INSERT. There are multiple tables to add or update employee data, as well as product data, among other details.
4. Does each INSERT also add the corresponding FK attributes, including at least one M:M relationship? In other words if there is a M:M relationship between Orders and Products, INSERTing a new Order (e.g. orderID, customerID, date, total), should also INSERT row(s) in the intersection table, e.g. OrderDetails (orderID, productID, qty, price and line_total).
    a. I personally don’t see it within the site, but this is achieved based on the project’s documentation.
5. Is there at least one DELETE and does at least one DELETE remove things from a M:M relationship? In other words, if an order is deleted from the Orders table, it should also delete the corresponding rows from the OrderDetails table, BUT it should not delete any Products or Customers.
    a. I didn’t see a DELETE on the current version of the site, but based on the documentation, direction of the site, and the goal of the database, I can assume one would be implemented in the future.
6. Is there at least one UPDATE for any one entity? In other words, in the case of Products, can productName, listPrice, qtyOnHand, e.g. be updated for a single ProductID record?
    a. Yes, there is. The site offers a function to update employee details. One small addition could possibly be to be able to update product details, such as if the price has changed or the manufacturer has changed the product’s name.
7. Is at least one relationship NULLable? In other words, there should be at least one optional relationship, e.g. having an Employee might be optional for any Order. Thus it should be feasible to edit an Order and change the value of Employee to be empty.
    a. It seems that in their documentation that there is at least one NULLable relationship or an attempt to implement one. i.e. There can’t be a Sale without a Customer.
8. Do you have any other suggestions for the team to help with their HTML UI?
    a. Everything looks really good! The only suggestion I have is perhaps spacing some of the tables/forms a little further from the others on pages that have multiples, for easier readability. But other than that, the site looks great so far.

Yuxiao Huang

1. Does the UI utilize a SELECT for every table in the schema?
    a. Yes, each table has its own corresponding table for showing the information. And each web page has an unique table based on your documentation. You don't need to do any change for the content of this part.
2. Does at least one SELECT utilize a search/filter with a dynamically populated list of properties?
    a. Yes, I've seen many search boxes under your web pages except your Manger page.But you might not need to do that under Manger page.
3. Does the UI implement an INSERT for every table in the schema?
    a. Yes, each table has an INSERT button. Customer, employee, Product and so on tables need INSERT button. And you did that very clear.
4. Does each INSERT also add the corresponding FK attributes, including at least one M:M relationship?
    a. I did not find out that in your web pages. I get them in your documentations, so I think you will finish this part in the future work.
5. Is there at least one DELETE and does at least one DELETE remove things from a M:M relationship?
    a. I'm not sure, because I did not see any DELETE under any page of your website. But I think you will add them aroung INSERT buttons.
6. Is there at least one UPDATE for any one entity?
    a. Yes, in the "Employees" and the "Sales" pages, the UPDATEd table will be shown after the user types their information and clicks "Submit".
7. Is at least one relationship NULLable?
    a. I found that in your documentation, the relationship NULLable is to do something. For example, there cannot be a Sale without a Product.
8. Do you have any other suggestions for the team to help with their HTML UI?
    a. If you wanna create a whole website, you are supposed to do some colorful stuff. Like, set a background picture or change the font. In general, your website looks very clear and the new user can utilize it very quickly.

Will Dang

1. Does the UI utilize a SELECT for every table in the schema? In other words, data from each table in the schema should be displayed on the UI.
    a. Yes, the UI does utilize a SELECT for every table in the schema, and does so in accordance to the project documentation provided.
2. Does at least one SELECT utilize a search/filter with a dynamically populated list of properties?
    a. Yes, multiple pages utilize a search function with dynamically populated list of properties, except for the manager page (which doesn't require this function).
3. Does the UI implement an INSERT for every table in the schema? In other words, there should be UI input fields that correspond to each table and attribute in that table.

    a. Every table in the schema has an INSERT button for necessary attributes such as customers, products, etc.
4. Does each INSERT also add the corresponding FK attributes, including at least one M:M relationship? In other words if there is a M:M relationship between Orders and Products, INSERTing a new Order (e.g. orderID, customerID, date, total), should also INSERT row(s) in the intersection table, e.g. OrderDetails (orderID, productID, qty, price and line_total).
    a. I did not notice this when checking it, but according to your documentation, you plan to implement this so I am assuming that will be done sometime in the future.
5. Is there at least one DELETE and does at least one DELETE remove things from a M:M relationship? In other words, if an order is deleted from the Orders table, it should also delete the corresponding rows from the OrderDetails table, BUT it should not delete any Products or Customers.
    a. The DELETE only becomes available after having submitted the data for display. This function was seen from the "Customers," "Employees," "Sales," and "Products" pages.
6. Is there at least one UPDATE for any one entity? In other words, in the case of Products, can productName, listPrice, qtyOnHand, e.g. be updated for a single ProductID record?
    a. Yes, there is an UPDATE function, particularly in the pages for Employees and Sales. After the user inputs information and clicks submit, the updated table should return.
7. Is at least one relationship NULLable? In other words, there should be at least one optional relationship, e.g. having an Employee might be optional for any Order. Thus it should be feasible to edit an Order and change the value of Employee to be empty.
    a. There is at least one NULLable relationship according to the provided draft. For instance, the relationship between Sales and Customers (cannot have sale without a customer).
8. Do you have any other suggestions for the team to help with their HTML UI?
    a. The only suggestion I have is to figure out how to add corresponding fk attributes for the INSERT. Otherwise, I think that your website looks easy to read and very clear. Maybe add more stylistic component to make it more interesting visually (add a picture or two, etc).

Step 3: Actions based on feedback

Based on feedback during project step 3, we took the following actions and made changes and upgrades to our HTML template, ERD and Schema.

- Create dynamic drop down menu (Piazza @170).
    - When ADDing a new Sale, have the option to select a customer from a drop down list. This list will be populated by using a SELECT to query all customers and populate the drop down.
    - We were previously a bit confused as to what would constitute a dynamically populated list, but the TA's forum post on Piazza clarified this.
- Show FK attributes of Sales_Products any time a Sale or Product is queried and make sure the INSERT (add) page for these two tables updates the Sales_Products intersection table as well.

    - During our first implementation we were not sure how to show foreign keys being added to our intersection table, but solved this by adding some example data to the Sales and Products tabs of the website.
    - Now, when clicking submit in either of these tabs, in addition to sample data for a Sale or Product being shown, a new table is shown called “Sales_Products” showing entries (foreign keys) related to the queried Sale or Product.
- Additionally, we received feedback from our TA on Project Step 2 noting that we had productId as an attribute of a Sale in both the Schema and ERD. While these had previously been removed from the outline, we had forgotten to remove them from the Schema and ERD. This has been remedied.
    - We also noticed that SaleId was an attribute of the Customers entity on the ERD and Schema, which was also an error. This attribute has been removed from these images.

Upgrades to the Draft Version

While implementing the peer and TA feedback, a few changes were added to add clarity and quality-of-life improvements to the HTML template.

- Added productId as a search element for products.
    - It seems that it will be useful to search (query) for a product by its ID number in addition to its name and other attributes.
- Example search for a product changed to just return a single product. As if the user had searched for "Clown Fish" or productId "2".
    - To simulate searching for a single product, the example results were modified.
- Example search for a sale changed to return two sales generated by employee 14 (as if the user had searched for Employee 14's sales on a certain date.
    - The corresponding Sales_Products table now shows all entries related to saleId 1 and 23.
        - saleId #1 contains three different entries for the three products that were sold as part of that transaction.
        - saleId #23 contains 1 entry for the single product that was sold during that transaction.

Step 2: ERD & Schema: Feedback from peer review

1. Does the overview describe what problem is to be solved by a website with DB back end?
    a. **Kyeong-nam Kim**: Yes, the overview clearly describes the problem and solution to be implemented by a DB back end.
    b. **Daniel Yopp**: Yes! Great idea and writeup! Its clear writer was enthusiastic about idea.
    c. **Christopher Brown**: Yes, the database acts as a data aggregator for a chain of fish stores. It tracks the relationships between the 3 locations and it's employees and customers.
2. Does the overview list specific facts?
    a. **Kyeong-nam Kim**: Yes, the overview provides the numbers of specific data in a form of table.

   b. **Daniel Yopp**: Yes. Description lists current store traffic as well as the workload the system will be expected to preform.
   c. **Christopher Brown**: Yes, the overview gives specifics on the number of stores, employees, transactions, and customers.
3. Are at least four entities described and does each one represent a single idea to be stored as a list?
   a. **Kyeong-nam Kim**: Yes, there are 5 entities and each entity represent a single idea.
   b. **Daniel Yopp**: Yes. There are five total entities. Even though employees and customers are both people, their roles are so different that I believe they can be stored as different entities.
   c. **Christopher Brown**: Yes, there are 5 different entities to be tracked by the database. They are the Stores, the Employees, Customers, Sales, and Products.
4. Does the outline of entity details describe the purpose of each, list attribute datatypes and constraints and describe relationships between entities?
   a. **Kyeong-nam Kim**: Yes, every entity has a description of its purpose, attributes along with datatypes and constraints, and relationships with different entities.
   b. **Daniel Yopp**: Yes. Each entity is thoroughly documented.
   c. **Christopher Brown**: The outline gives a list of attributes and some constraints for each entity, but each could use a brief description of its purpose.
5. Are 1:M relationships correctly formulated? Is there at least one M:M relationship?
   a. **Kyeong-nam Kim**: Yes, 1:M relationships are correctly formulated. Two M:M relationships are well designed.
   b. **Daniel Yopp**: I think the relationships are appropriate. The customer to employee may be a bit of a stretch but I think its ok.
   c. **Christopher Brow**n: Yes, there are 1:M relationships for Customers and Employees to Sales, and Stores to Employees. There are several M:M relationships, although I am a little confused of the purpose of the Customer:Employee relationship repeated outside of Sales.
6. Is there consistency in a) naming between overview and entity/attributes b) entities plural, attributes singular c) use of capitalization for naming?
   a. **Kyeong-nam Kim**: Other than attribute hours which is singular in Stores, naming is consistent.
   b. **Daniel Yopp**: Yes, naming is consistent. Entities are capitalized and plural. Attributes are camelCase and singular.
   c. **Christopher Brown**: Yes, the schema, outline, and ERD are consistent in naming and capitalization. However, on the ERD, I think the participation is mandatory for at least the Product:Sales relationship (a SaleID must have at least 1 ProductID), and likely Stores:Employees (a store needs at least 1 employee) and Customer:Sales as well (are they really a customer if you've never sold them anything?)

TA Feedback Step 2 Final Version

-ProductID should not be a field in Sales; the Sales_Product tables helps detail a Sale as-is.

Step 2: Actions based on feedback

1. We have removed the productId as an attribute of Sales as a result of this TA feedback.
    a. We had intended to remove this, and the outline of the database reflects this, but our Schema and ERD had not been updated to reflect this change.
2. Remove Stores as an entity.
    a. We decided to step away from the idea of tracking sales, products, employees, and customers of different stores. Instead we are aiming to track the entire company as a whole, storeIDs only specified in employee and sales attributes.
    b. This feedback was given to us by our TA during initial grading the project proposal and did not come from peer review. At first, we thought we'd want to retain this entity, but after seeing that it caused some confusion during peer review and after our team completed module 4, we think it is best to remove the Stores entity entirely.
3. Remove Customer to Employee relationship.
    a. Upon further consideration, an employee to customer relationship may not need to be explicit. This information could be found as both an employee and customer will be related to every Sale (by their respective ID numbers).
    b. This removes a M:M relationship with one remaining between Products and Sales.
4. Added clarification to outline descriptions
    a. As a team, we have gone back through the outline and added more descriptions to the attributes and their constraints that needed it most.
5. Mandatory participation of Product to Sales relationship and of Customer to Sales.
    a. A change has been made so that a sale now must have 1 or many products instead of 0 or many.
    b. We thought about it and decided to allow a customer to be in the system and not be associated with any Sales. For example, a customer may have set up a profile, but decided not to buy anything.

Step 2: Upgrades to draft

1. We decided to remove the assignedTask attribute from the Employee entity as it would likely end up being a list of individual tasks. It would be difficult to conform to Normal Form 1 with this.
    a. If future expansion of the database is needed, we will be able to add some relationship between a schedule and an employee, but this will only occur if time or a future assignment allows for it.
2. In order to conform to NF 3, we reworked and simplified attributes.
    a. The "workDays" of an employee violates normal form 1, so we removed this attribute.
    b. We modified the startTime and stopTime attributes to not be dependent on information from the workDays field.
3. Added a transactionDate attribute to the Sale entity so that the client can query the database to look at sales on a particular day.

4. An intersection table called “Sales_Products” was added to relate the many-to-many relationship between Sales and Products. This means that Sales now has a 1:M relationship with Sales_Products and Products now has a 1:M relationship with Sales_Products.